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ABSTRACT

This study sought to determine if changes in the supply, distribution, and minority representation of health professionals over the past decade have been effective in creating greater access to health care in rural and underserved areas, and if these changes were attributable to programs established under Titles VII and VIII of the Public Health Service Act. A review of relevant data and studies found that, over the past decade, the supply of nearly all health professionals has increased faster than the population. For most health professions, however, data are not available to demonstrate whether this increased supply has translated into more access to care in rural and underserved areas. While almost $2 billion has been provided for 30 Title VII and VIII programs in the last 10 years, evaluations have not shown that these programs had a significant effect on those changes that have occurred in the supply, distribution, and minority representation of health professions. The bulk of the report consists of four appendixes, which provide information about: (1) the objectives, scope and methodology of the study; (2) changes in urban-rural supply and distribution of health professions; (3) changes in minority representation in health education and practice; and (4) the major contributors to the report. (MDM)

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United States General Accounting Office

GAO

Report to Congressional Committees

July 1994

HEALTH PROFESSIONS EDUCATION

Role of Title VII/VIII Programs in Improving Access to Care Is Unclear

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United States
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Washington, D.C. 20548

Health, Education, and
Human Services Division

B-252732

July 8, 1994

The Honorable Edward M. Kennedy
Chairman, Committee on Labor and Human Resources
United States Senate

The Honorable Nancy L. Kassebaum
Ranking Minority Member
Committee on Labor and Human Resources
United States Senate

The Honorable John D. Dingell
Chairman, Committee on Energy and Commerce
House of Representatives

The Honorable Carlos J. Moorhead
Ranking Minority Member
Committee on Energy and Commerce
House of Representatives

An appropriate supply and distribution of health professionals is vital to ensuring that all Americans have adequate access to health care. In fiscal year 1993, the Congress provided nearly $354 million for 42 health professions training programs that would further this goal. Thirty of these programs, established under Titles VII and VIII of the Public Health Service Act, are aimed at improving access to health care by (1) increasing the supply of primary care providers and other health professionals, (2) improving their representation in rural and medically underserved areas, and (3) improving minority representation in the health professions.

As it debates health care reform, the Congress is considering strategies such as those contained in Titles VII and VIII to increase the number of primary care providers and improve access to care in underserved areas. The 1992 amendments reauthorizing Titles VII and VIII require us to report on the effectiveness of these strategies and programs. Therefore, we focused our review on determining how

- available data have shown that changes in the supply, distribution, and minority representation of health professionals have been effective in creating greater access to health care in rural and underserved areas, and
- evaluations have shown that these changes were attributable to Title VII and VIII programs.

See appendix I for a discussion of our objectives, scope, and methodology.

Results in Brief

Over the past decade,[1] the supply of nearly all health professions has increased faster than the population. For most health professions, however, data are not available to demonstrate whether this increased supply has translated into more access to care in rural and underserved areas. For the two professions with the most data available—primary care physicians and general dentists—supply has increased in many rural areas but not in those urban and rural areas where the greatest shortages exist. Ou[illegible]dings are similar for minority recruitment; although the number of minorities in the health professions is increasing, data are inconclusive to support HHS' premise that further increases will improve access to health care for underserved populations.

While almost $2 billion has been provided for 30 Title VII and VIII programs in the last 10 years, evaluations have not shown that these programs had a significant effect on those changes that have occurred in the supply, distribution, and minority representation of health professionals. Often evaluations have not addressed these issues, and those that did had difficulty establishing a cause-and-effect relationship. Such a relationship is difficult to establish because the programs have other objectives besides improving supply, distribution, and minority recruitment and because no common outcome goals or measurements have been established. Schools have used the broad discretion allowed under Titles VII and VIII to address other objectives, such as changing curricula to respond to emerging local or national health issues. The Congress recently took action to target Title VII and VIII funding more specifically for primary care and underserved areas, but these actions are not likely to have much impact, at least in the short run.

Background

Titles VII and VIII of the Public Health Service Act, established in 1963 and 1964, authorize many different programs for dealing with the supply and distribution of health professionals and the recruitment and retention of minorities in health professions schools. Title VII programs focus mainly on physicians, general dentists, physician assistants, and allied health

[1]The decade ranged between 1980 and 1992 depending on the data available for each profession.

personnel,[2] while Title VIII programs focus on nurses, nurse practitioners, and nurse-midwives. Both titles include programs for direct student assistance, such as loans, as well as grants to institutions for expansion or maintenance of education and training. The programs are administered through the Department of Health and Human Services (HHS).

The two titles initially focused on increasing enrollments and ensuring the financial viability of schools. In the mid-1970s, they began to focus on other matters as well, such as increasing the number of primary care providers, encouraging their distribution to rural or underserved areas, and increasing the number of minorities in the health professions. This change in focus of the programs was to complement the federal government's primary strategy to relieve underservice, the National Health Service Corps—a Title III program that places providers in communities that HHS designates as having shortages of such personnel. HHS uses the designation of health professional shortage areas (HPSAs) to refer to these areas, populations, or facilities that request federal intervention to relieve underservice.

The focus of Title VII and VIII programs has been debated over past years. For example, in fiscal year 1992, HHS proposed a 64-percent funding reduction of $156 million for the two titles, arguing that federal programs over the past 20 years had resulted in general surpluses and improved distribution of health professionals. Opponents contended that the ratio of primary care providers to specialists was still inappropriate, and some areas still had shortages of primary care providers. The Congress agreed, expanding funding by about 20 percent in both fiscal year 1992 and 1993.

When it increased funding for the programs in fiscal year 1993, the Congress also took steps to provide further focus on issues of primary care availability in underserved areas. It restricted three student assistance programs to primary care disciplines and established funding preferences for 19 grant programs, targeting them to grant recipients with the greatest success in placing graduates in medically underserved communities. Increasing the amount of money for education and training is also part of the administration's proposal for health care reform. For 1994, the administration proposes spending an additional $400 million for education

[2]Allied health refers to a broad range of health related occupations that function to assist or complement the work of physicians, nurses, and other specialists in the health care system. However, HHS has narrowed the definition of allied health for program and educational assistance purposes to those professions such as physical therapy and dietetics that require professional training at the post-secondary school level and, therefore, this is the definition we used for this report.

and training programs similar to those contained in Titles VII and VIII to help provide greater access to health care.[3]

Data Not Sufficient to Demonstrate Success of Existing Strategies

For the most part, data were limited or nonexistent on the number of persons within each health profession, whether they practiced in rural areas and HPSAs, and the number of minorities in health education and practice. The most complete data, which HHS obtained from the professional associations, were for primary care physicians and general dentists. For other professions, such as nurses and the allied health professions, these data were incomplete or missing altogether. From the available data, however, the following points stand out:

- The supply of primary care physicians and general dentists has increased in all types of urban and rural areas but the distribution patterns in HPSAs have remained relatively unchanged for the past 15 years. This indicates that HPSAs may be caused more by individual community or population characteristics rather than an overall geographic maldistribution between urban and rural areas.
- The lack of data on distribution of other health professions sharply limits any determination of the extent of underservice in HPSAs and the number of additional providers needed there.
- The number of African-Americans, Hispanics, and Native Americans in health education and practice has increased faster than the rate for all races combined. However, HHS' evidence that these increases will significantly improve access to care for underserved populations is inconclusive.

Increased Supply of Primary Care Physicians and Dentists Has Not Improved Distribution

Between 1975 and 1990, the number of primary care physicians and general dentists increased faster than the population. For example, the overall number of primary care physicians providing patient care rose 75 percent, while the population as a whole rose by 17 percent.[4] However, the increased supply did not improve—and even slightly exacerbated—the uneven distribution between urban and rural areas that already existed. One indicator used by HHS to identify maldistribution is to compare the percentage of health professionals serving in urban and rural areas with the percentage of the population living there. In 1975, rural counties held 24 percent of the nation's population but only 16 percent of its primary care physicians. By 1990, this gap had widened further as rural counties

[3]The proposal gives HHS the discretion to administer these programs with those in Titles VII and VIII.

[4]For additional information on the supply and distribution of health professionals see appendix II.

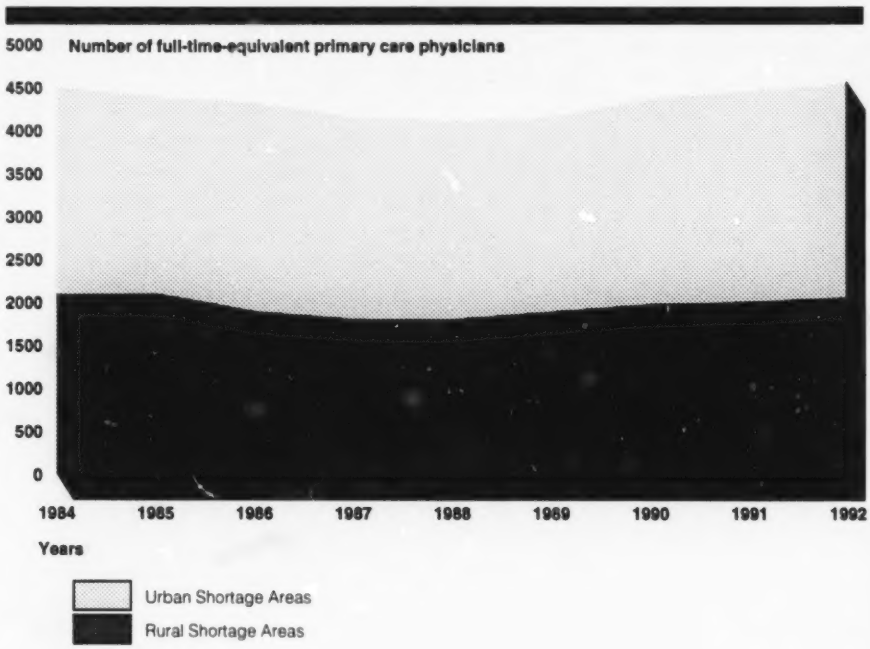
held 23 percent of the population but only 14 percent of primary care physicians.

Although no improvement occurred in distribution between urban and rural areas, the substantial increase in primary care physician supply may have resulted in greater access to primary care for people in rural as well as urban counties. In 1975, rural areas had 1 primary care physician for every 2,536 people, but by 1990, this ratio had improved to 1 for every 1,872 people—better than HHS' target of 1 primary care physician for every 2,000 people. Even though the most densely populated urban areas already had 1 primary care physician for every 1,265 people in 1975, ratios there dropped even more dramatically to 1 for every 879 people in 1990.

Despite increased numbers of primary care physicians and general dentists in urban and rural areas, their availability in HPSAs did not improve. Communities that apply for and receive designation as an HPSA are eligible for placement of federally funded providers through the National Health Service Corps.[5] As figure 1 shows, the need for primary care physicians in HPSAs remained at about 4,500 full-time-equivalent positions from 1984 through 1992.

[5]HPSA designation also provides higher "customary" charges to new physicians, and a 10-percent bonus payment to all physicians providing Medicare reimbursable services in the area. Medicare and Medicaid reimbursement is also provided to physician assistants and nurse practitioners in HPSA rural health clinics.

Figure 1: Primary Care Physicians Needed in Urban and Rural Shortage Areas, 1984-92



One reason that the distribution of primary care physicians and dentists in HPSAs may not be improving is that much of the reported need for practitioners in these areas is for part-time positions. Many areas need only the equivalent of one-tenth of a physician to remove their shortage designation, which may not provide enough of a financial incentive to practice there. For example, of the total 4,200 primary care physicians reported as needed in HPSAs within the 50 states and the District of Columbia,[6] 3,300 are for full-time physicians, with the remaining full-time-equivalent positions translating to 1,925 part-time positions. This may particularly affect rural populations, because nearly three-fourths of the part-time positions are in rural HPSAs, compared with about one-third of the needed full-time physicians.

[6]About 300 of the full-time-equivalent primary care physicians needed are reported for rural areas of the Commonwealth of Puerto Rico, the Northern Mariana Islands, the Virgin Islands, Guam, American Samoa, and the Trust Territory of the Pacific Islands.

Better Information Needed on Distribution of Other Health Professions

Most health professions other than primary care physicians and general dentists have also grown significantly faster than the population. However, HHS data on the distribution of these other professions are limited, making it difficult to assess whether the increased supply has had a positive effect on rural areas and HPSAs.

The available data indicate that distribution may be shifting increasingly to urban areas, leaving shortages in some locations. A number of these professions, such as nurse practitioners, physician assistants, and nurse-midwives, were developed in response to concerns about geographic maldistribution of primary care providers. However, increased demand for such professionals in urban areas is apparently affecting their availability in rural areas. For example, in 1981, 27 percent of physician assistants practiced in communities with populations under 10,000; in 1992, the percentage dropped to 16 percent.[7] In addition, some rural facilities report critical shortages of allied health personnel such as physical and occupational therapists, which were ranked by the American Hospital Association in 1991 as having the highest hospital vacancy rates of all occupations.

Trends with regard to HPSAs are less clear, because HHS generally does not track or consider health services delivered by most health professions in designating areas with primary care shortages. For several reasons, however, collecting this information seems especially important. One reason is that nurse-midwives, nurse practitioners, and physician assistants can provide a significant amount of primary care services. For example, studies have shown that nurse practitioners and physician assistants are capable of managing from 50 to 90 percent of the diagnoses seen in outpatient primary care settings.[8] Excluding these providers may, therefore, overstate how underserved shortage areas are, as well as overstate the reported number of additional primary care physicians needed. Available data[9] show that at least

[7]James F. Cawley, "Physician Assistants in the Health Care Workforce," prepared for the Association of Academic Health Centers (Washington, D.C.: Apr. 13, 1993)

[8]Cawley, "Physician Assistants in the Health Care Workforce;" U.S. Congress, Office of Technology Assessment, "Nurse Practitioners, Physicians' Assistants, and Certified Nurse-Midwives: Policy Analysis," (Washington, D.C., U.S. Government Printing Office, Dec. 1986); and Jane Cassels Record, and others, "Case Mix in HMOs and Fee-for-Service Systems: The Ratio of Routine Visits to Total Visits in Adult Primary Care," Social Science & Medicine, Vol. 14C. (1980), pp. 267-273.

[9]Data reflect about 78 percent of physician assistants and 80 percent of certified nurse midwives practicing primary care or obstetrics/gynecology according to the American Academy of Physician Assistants and the American College of Nurse-Midwives. Data on practice locations for nurse practitioners were not readily available.

- 369 physician assistants and nurse-midwives are providing care to the underserved in the nation's counties designated as primary care HPSAs.
- 3,834 additional physician assistants and nurse-midwives are practicing in counties with a primary care HPSA somewhere within their borders. Available data were insufficient to determine how many of these persons were actually providing care to the underserved.

A second reason that collecting this information is important is that, as we have already pointed out, many shortage areas have need for only a part-time physician, and it may be difficult for physicians to set up a financially viable practice in such situations. On the other hand, providers such as nurse practitioners and physician assistants can achieve financial self-sufficiency with a smaller patient base than physicians, which may make them more likely to locate in underserved or rural communities.

Effect of Increased Minority Representation Not Fully Established

HHS supports increased recruitment and retention of African-Americans, Hispanics, and Native Americans because these minorities are considered underrepresented in the health professions in relation to their representation in the population. Although historical data are not available for minority students in most professions, they are available for physicians, dentists, and registered nurses. For these three professions, the data show that the numbers of minority applicants, first-year enrollees, and graduates have increased at a greater rate than for all races combined. For example, between 1980 and 1991, the number of African-American, Hispanic, and Native American medical school graduates grew 31 percent, while during the same period, the number of medical school graduates for all races combined decreased by 2 percent.[10]

The progress made in increasing minority representation can be measured in several ways. HHS' goal is for the percentage of minorities in each health profession to equal its percentage in the U.S. population. While some professions have reached this "population parity" for certain minorities, most have not. However, using population parity to measure achievement of improved minority representation in health education and training programs is difficult because the percentage of the minority population that is old enough or has sufficient education to enter health professions schools is not at parity. For example, in 1991, African-Americans represented about 12 percent of the U.S. population but constituted only 6 percent of the population that was 25 years of age or older and college

[10]For additional information on minority representation in health education and practice see appendix III.

educated. Adjusting population parity to account for education levels needed to enter the various health professions yields a significantly more positive picture. For example, physician and dentistry professions, considered to be about 50-percent deficient in minority representation under population parity, are enrolling and graduating minorities near or above 100 percent of education parity.

A profession-by-profession analysis of available data also shows that when education levels are taken into account, the progress in improving minority representation has been less for professions requiring a high school degree rather than a college degree to enter training. This is particularly true for registered nurses and for such allied health professions as physical therapists, speech therapists, and radiologic technicians, for which minority representation actually decreased since 1980. Many of these latter professions are not eligible to receive funding from all the Title VII and VIII programs that target minorities. For example, nursing schools and students are eligible to participate in only three of the eight minority programs.

Extent of Minority Practice in Underserved Areas Unknown

In addition to promoting diversity among health care providers, HHS states that increasing the number of minority health providers is an integral part of its overall strategy to improve access to health care for underserved populations. In Health Personnel in the United States, Eighth Report to Congress, HHS cites four studies to support a view that minority health professionals practice in underserved areas at a greater rate than nonminorities and, therefore, increasing minority representation within the health professions will improve access to care for underserved populations.[11] However, our review of these studies indicates that the support for this premise is inconclusive. For example, results from the selected sample pools in the studies may not be representative of practice patterns for all minority health professionals. In two studies, the graduates were from historically black colleges and may not be representative of their counterparts graduating from other colleges and universities. A third study reported that its use of census data to identify minority practice locations was limited because the data were specific to place of residence rather than place of employment and sampling error is substantially

[11]The four studies are S.N. Keith, and others, "Effects of Affirmative Action in Medical Schools: A Study of the Class of 1975," New England Journal of Medicine, 313 (1985), pp. 1519-1525; S.M. Lloyd, and others, "Survey of Graduates of a Traditionally Black College of Medicine," Journal of Medical Education, 53 (1978), pp. 640-650; U.S. Department of Health and Human Services, Location Patterns of Minority and Other Health Professionals (Publication HRS-P-OD-85-2, 1985); and R.C. Warren, Analysis of Student and Practitioner Data: Meharry Medical College School of Dentistry (U.S. Department of Health and Human Services Contract HRSA-87-415, July 1988).

compounded when analysis is focused on smaller groups within the general population, such as minorities.

The studies also concluded that factors other than race, such as gender, place of upbringing, or impact of training at specific institutions, may have as much or more significance in determining practice patterns. Differences in where minorities choose to practice and the types of populations they serve also depend on the characteristics of the underserved populations being studied. For example, a study of demographic changes in the medical profession found that Hispanic and African-American women physicians treated a greater percentage of Medicaid patients than men or other women physicians but did not treat a significantly higher percentage of uninsured patients.[12]

Evaluations Do Not Link Improvements to Title VII and VIII Programs

Evaluations of Title VII and VIII programs have not conclusively linked these programs to changes in the supply, distribution, and minority representation of health professionals. HHS is not required to evaluate the effectiveness of each program, and 6 of the 23 programs established before 1990 have never been evaluated.[13] Evaluations performed on the remaining 17 programs generally addressed the impact of the programs at individual institutions and results could not be generalized to determine the national impact of the programs in these areas.

Evaluations that did have a national scope generally found either that the programs had limited effect on improvements in supply, distribution, and minority representation in the health professions or that no cause-and-effect relationship could be established. For example, a 1991 evaluation of Title VII primary care medical education programs concluded that Title VII funding in and of itself is unlikely to lead to the creation of more primary care physicians or induce physicians to practice in underserved areas.[14]

[12]J. Hadley, and others, Some Consequence of the Demographic Transformation of the Medical Profession, Center for Health Policy Studies (January 1993).

[13]The Secretary of HHS is authorized by statute to set aside up to 1 percent of Public Health Service (PHS) appropriations for evaluations. We previously reported that this set-aside has been less than fully effective in providing information to the Congress on Public Health Service programs. See Public Health Service: Evaluation Set-Aside Has Not Realized Its Potential To Inform The Congress, (GAO/PEMD 93-13, Apr. 8, 1993). A recent amendment, effective October 1, 1994, requires the Secretary to make available no less than 0.2 percent of PHS funds for evaluations.

[14]M.E. Whitcomb, and others, Impact of Federal Funding for Primary Care Medical Education on Medical Student Specialty Choices and Practice Locations (1976-1985) (WAMI Rural Health Research Center, Grant #HAR000017-03, Apr. 1991).

Problems Hindering Program Evaluation

Several problems limit attempts to link Titles VII and VIII to improvements in supply, distribution, and minority recruitment and retention of health professionals. These include (1) other program objectives unrelated to issues of supply, distribution, and minority representation; (2) the lack of common outcome goals, data, and reporting requirements to measure progress; and (3) the inability to separate the effects of Titles VII and VIII from those of other funding sources.

Multiple Objectives

Title VII and VIII legislation authorizes funding for a number of diverse objectives under each program. Evaluation is difficult because funded objectives vary not only among grantees, but even within the same grant. In addition, some objectives, such as improving curricula, may only indirectly result in improvements to supply, distribution, and minority representation. For example, one institution received a $300,590 family medicine grant to further the achievement of 12 separate objectives. Only 1 of the 12 objectives was to directly improve distribution and minority representation; none was for increasing supply. The other 11 were for various curricula improvements, such as expanding the behavioral science curriculum and maintaining physician practice-management curriculum.

While HHS can limit funding more specifically to supply, distribution, and minority recruitment and retention issues, it has generally allowed schools the broad discretion provided in legislation to address other national issues or their own locally defined needs.[15] Evaluations have shown that Title VII and VIII programs may have assisted schools in meeting some of these other objectives. For example, evaluations found that federal funding assisted grant recipients in securing funding from state governments and other sources and improving or enhancing curricula to address emerging national health concerns such as acquired immunodeficiency syndrome (AIDS) and geriatrics. Evaluations also found that the programs were important for funding innovative projects and providing "seed money" for starting new programs. For example, Title VII was considered important in the creation and maintenance of family medicine departments and divisions in medical schools, and Title VIII was considered important in the development and start-up of advanced nursing education programs for nurse practitioners and nurse-midwives.

[15]HHS has offered funding preferences or priorities related to improving distribution or minority recruitment in most programs, but these factors have tended to set the order in which grant applications were funded rather than restricting how qualifying schools were to use the funds. For example, HHS offered funding priorities to family medicine grant applicants already offering training in medically underserved areas, but allowed the grantees to use the funding for other approved objectives such as curricula improvement.

Lack of Common Outcome Goals and Data

None of the 30 programs we reviewed had specific program outcome goals against which to measure progress. For example, the stated goal of several programs is to generally increase the number of practitioners rather than specifically identifying how much of an increase is necessary before federal intervention has achieved its goals. Without measurable program goals, it is difficult to evaluate the relative success of the programs or how much federal funding is needed. HHS is currently developing outcome measures and proposing to combine some of the Title VII and VIII programs for several professions in response to the administration's effort to streamline government.[16] However, without defined outcome goals and measures for each profession, evaluating how well resources were allocated and spent among the different professions within these combined programs will be difficult.

In the past, the programs lacked common outcome data and reporting requirements, and data that were provided to HHS remained unverified. Grantees have, in some cases, reported on the process they established to achieve results, rather than on the results themselves. For example, a grantee reported that it instituted a recruitment activity but did not report how many students were actually recruited through federal funding of this activity.

Although the Congress instituted standard reporting requirements for grants beginning in fiscal year 1994, several problems remain in linking these data to the effectiveness of Title VII and VIII programs. First, the requirement does not apply to all Title VII and VIII programs. Second, as discussed previously, schools do not have to use the Title VII and VIII funds for the purposes defined in the reporting requirements. Finally, HHS does not verify that the process that grantees use to develop the data is standardized or comparable between schools,[17] relying primarily on self-reporting by grantees to monitor progress towards meeting the individual grant objectives.

Overlapping Influences

Influences from other funding sources also complicate efforts to identify the impact of federal programs. For example, Title VII funding comprises only a small fraction of funding for medical education at most institutions, making it difficult to determine how much change is attributable to Title VII. HHS officials cite competing priorities of other federal programs that

[16]We previously reported that we had insufficient information to judge whether health professions education programs should be consolidated or eliminated in Management Reform: GAO's Comments on the National Performance Review's Recommendations (GAO/OCG-94-1, Dec. 1993).

[17]We did not review HHS' process of auditing grantees' financial data.

also may mask or minimize the effects of Titles VII and VIII. For example, the officials said that they consider the billions of dollars of federal funding provided to medical schools from the National Institutes of Health for biomedical research and the Medicare program for the training of specialist physicians to counteract the incentives provided by the much smaller amounts provided in Title VII to promote primary care education and training.[18]

Effect of Recent Congressional Targeting of Programs May Be Difficult to Measure

In reauthorizing Titles VII and VIII in 1992, the Congress added two provisions targeting program funding for primary care and service to medically underserved communities. The first provision, affecting three student assistance programs, requires that medical and dental students receiving assistance specialize and practice in a primary care discipline. However, because a primary care education in medicine or dentistry can take 7 and 4 years, respectively, the effect of this provision will not be known for some time. Health professions schools will have to track loan and scholarship recipients during school and after they graduate to ensure continued practice in primary care fields. In doing so, representatives from HHS said that they plan to base compliance on student and practitioner self-reporting. HHS has not programmed resources to verify this information and, thus, to ensure that service in primary care occurs.

The second provision, which affects 19 programs, gives a funding preference to health professions schools demonstrating success in placing graduates in medically underserved communities; but there are several reasons it may be difficult to determine what effect, if any, this provision will have. Although schools receive preferential funding for placing graduates in underserved areas, they are not required to use Title VII and VIII funding for this purpose. HHS has only limited data regarding whether funding factors are effective as incentives to bring about change in various education and training institutions. Data from the one study performed found that medical residency directors will use funding priorities if they meet the requirements, but they will not change their programs merely to obtain Title VII funding.[19] Preliminary experience in implementing the preference in fiscal year 1993 showed no significant differences in the

[18]For example, in fiscal year 1985, Title VII funding for graduate medical education in academic medical centers equaled only 7 percent of the total Medicare funds provided to those centers. See M.E. Whitcomb, and others, Impact of Federal Funding for Primary Care Medical Education on Medical Student specialty Choices and Practice Locations (1976-1985) (WAMI Rural Health Research Center, Grant #HAR000017-03, Apr. 1991), p. 54.

[19]Powell, Charles L., A Survey of Attitudes Regarding Funding Priorities Used to Administer a Public Health Service Grant Program (The American University, 1989).

schools funded due to the preference—only 15 percent of the schools funded would not have been funded otherwise.

In addition, grantees have reported difficulties in obtaining data on graduates. As a result, data provided to HHS to qualify for the preference are not necessarily complete or comparable between schools, and HHS has not yet established a way to validate the data provided. Finally, HHS uses the federal HPSA system to report on the status of primary care underservice in the United States, but schools may use a variety of non-HPSA definitions for underserved areas to qualify for the preference. Our review of selected fiscal year 1993 grant proposals found that some grantees report that more of their graduates practice in these state and locally designated underserved areas than in HPSAs. Thus, the extent to which schools place graduates in these other areas will not reduce underservice as measured and reported at the federal level through the HPSA system.

Even though the effect of funding preferences and priorities are difficult to measure, HHS and officials from schools we visited believe that targeting federal funding is important. At a minimum, preferences and priorities were stated to highlight areas of national interest in health professions education and training, and assist in providing federal funding first to schools whose programs are similarly aligned.

Conclusions

Our review points to the need for the Congress to rethink the role of Title VII and VIII programs in improving the supply, distribution, and minority representation of health professions. The effectiveness of Title VII and VIII programs will remain difficult to measure as long as they are authorized to support a broad range of health care objectives without common outcome measures, goals, and reporting requirements. While the Congress directed in 1992 that many Title VII and VIII programs target funds to schools placing graduates in medically underserved communities and emphasizing primary care, it is unlikely that this directive will have an immediate and significant impact in reducing primary care underservice as measured by the federal HPSA system. Other options outside of Titles VII and VIII, such as proposals to expand the National Health Service Corps and provide for universal insurance coverage, are designed to have a more direct and immediate impact in relieving underservice, and as such could be considered in redefining the objectives of Titles VII and VIII.

Recommendation to the Congress

To the extent that the Congress chooses to use Title VII and VIII programs specifically to improve supply, distribution, and minority representation of health professionals, it needs to better assure that the programs are structured and that funds are used for these purposes. Specifically, the Congress should establish, or direct the Secretary of HHS to establish

- specific national goals for Title VII and VIII programs,
- common outcome measures and reporting requirements for each goal,
- restrictions limiting the use of funds to activities whose results can be measured and reported against these goals, and
- criteria for allocating funding among professions based on relative need in meeting national goals.

Although we did not obtain formal written comments from HHS, we discussed a draft of this report with HHS management officials within the Bureau of Health Professions responsible for Title VII and VIII programs. Overall, these officials indicated general agreement with our conclusions. They also made several technical suggestions that we incorporated where appropriate.

We are sending copies of this report to the Secretary of Health and Human Services and interested congressional committees. We will also make copies available to others on request. Please call me on (202) 512-7119 if you or your staff have any questions about this report. Major contributors to this report are listed in appendix IV.

Mark V. Nadel

Mark V. Nadel
Associate Director, National
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Abbreviations

AIDS	acquired immunodeficiency syndrome
HHS	Department of Health and Human Services
HIV	human immunodeficiency virus
HPSA	Health Professional Shortage Area
PHS	Public Health Service

Objectives, Scope, and Methodology

Review Objectives

The Health Professions Education Extension Amendments of 1992[20] require us to review the effectiveness of Title VII and VIII health education and training programs in

- increasing the number of primary care providers, nurses, and allied health personnel;
- improving the geographic distribution of health professionals in rural and medically underserved areas; and
- recruiting and retaining minorities as students in health professions schools.

Our preliminary work showed that data directly addressing these objectives were very limited. However, somewhat more data were available related to the more general issue of whether these kinds of strategies had reduced underservice in federally designated health professional shortage areas. To be responsive to our mandate and provide information for congressional debates on health care reform, the two objectives of our review focused on how

- available data have shown that changes in the supply, distribution, and minority representation of health professionals have been effective in reducing underservice in rural and underserved areas, and
- evaluations have shown that these changes were attributable to Title VII and VIII programs.

Scope and Methodology

We focused our review on 30 of the 42 Title VII and VIII programs,[21] because these 30 programs specifically address the supply, distribution, and minority recruitment and retention of health professionals. These 30 programs, listed in table I.1, accounted for nearly $244 million of the $354 million appropriated for Titles VII and VIII in fiscal year 1993.[22]

[20]Public Law 102-408, section 309.

[21]The remaining 12 programs were for education and training related to AIDS, geriatrics, podiatry, health administration, and preventive medicine and dentistry; a dentist reimbursement program for human immunodeficiency virus/acquired immunodeficency syndrome (HIV/AIDS) patients; and education research and data collection.

[22]Over the past 10 years, almost $2 billion has been provided for these 30 programs.

Table I.1: Title VII and VIII Programs in GAO Review

Program categories	Fiscal year 1993 appropriations (in thousands)
Supply/capacity	
Family medicine (4 programs)	$38,194
General internal medicine/general pediatrics (3 programs)	16,847
Residency training and advanced education in the general practice of dentistry	3,730
Physician assistant training program	4,916
Allied health projects	3,467
Health professional student loans	0[a]
Nursing special projects	10,401
Professional nurse traineeships	13,973
Nurse anesthetists (3 programs)	2,724
Nurse practitioner and nurse-midwifery	15,443
Advanced nurse education	12,253
Nursing student loans	0[a]
Distribution	
Area health education centers	19,812
Health education and training centers	2,836
Interdisciplinary training for health care for rural areas	4,017
Minority/disadvantaged	
Health careers opportunity program	24,961
Centers of excellence	23,481
Disadvantaged health professions faculty loan repayment and fellowship program	1,053
Scholarships for students of exceptional financial need	10,433
Financial assistance for disadvantaged health professions students	6,241
Loans for disadvantaged students	7,925
Scholarships for disadvantaged students	17,102
Nursing education opportunities for individuals from disadvantaged backgrounds	3,693
Total	**$243,502**

[a]No appropriations since fiscal year 1983. Schools continue to make loans through revolving fund from repaid loans.

In total, these 30 programs address over 30 health and allied health professions ranging from physicians and veterinarians to speech therapists and medical record technicians. We narrowed our review to 17 of these professions,[23] including primary care providers, nurses, and some allied health providers that were specifically mentioned in our mandate.

Our assessment of program effectiveness was limited to review of evaluations and related studies when available,[24] analysis of grant files, and discussion with HHS officials, program participants, and representatives from various health professional associations. We did, however, review HHS' and professional associations' data on supply, distribution, and minority representation of health professionals, including the process HHS uses to designate health professional shortage areas.

Changes in Supply of Health Professionals

We compared changes in the number of health professionals with that of the U.S. population to determine if increased supply had the potential to improve availability of health personnel. Because data collection for the health professions is not standardized or centralized within HHS or among the professional organizations, we obtained our data from a number of sources for the years at or around 1980 and 1990. Data from professional associations were available for primary care physicians, general dentists, and physician assistants, while data on the various nursing professions were limited to HHS sample surveys. For the allied health professions, Bureau of the Census data are considered to be the most comprehensive and comparable source, although there are limitations to their use and not all allied health professions are included. We used Census data to the extent that they were available as our source for the allied health professions. (Analyses of changes in the supply of health professionals and allied health professionals can be found in appendix II, figures II.1 and II.2.)

We further compared changes in the supply of primary care physicians and general dentists with that of the population in various types of urban and rural counties. We could not perform similar analyses for the other health professions because county-level data showing patient care practice

[23]Includes primary care physicians (family/general practice, general internal medicine, and general pediatrics), general dentists, nurse practitioners, nurse-midwives, physician assistants, registered nurses, licensed practical nurses, occupational therapists, respiratory therapists, medical record technicians, dental hygienists, physical therapists, dietitians, radiologic technologists/technicians, speech therapists, clinical laboratory technologists/technicians, emergency medical technicians.

[24]The program evaluations and some studies were financed or performed by HHS, while other studies were conducted by professional associations, academic research centers, or private foundations.

locations were not available.[25] We used the Department of Agriculture's Rural-Urban Continuum Codes for Metro and Nonmetro Counties to separate counties into 10 different types of urban or rural categories as depicted in table I.2.[26] We stratified the practice locations for primary care physicians and dentists and the U.S. population against these urban-rural continuum codes to obtain provider-to-population ratios for each type of urban and rural county.

Table I.2: U.S. Department of Agriculture Rural-Urban Continuum Codes for Metro and Nonmetro Counties

Code	Types of counties
Metropolitan counties (urban)	
0	Core counties of metropolitan areas of 1 million or more population
1	Fringe counties of metropolitan areas of 1 million or more population
2	Counties in metropolitan areas of 250,000 to 999,999 population
3	Counties in metropolitan areas having a population of fewer than 250,000
Nonmetropolitan counties (rural)	
4	Counties adjacent to a metropolitan area and having an urban population of 20,000 or more
5	Counties not adjacent to a metropolitan area and having an urban population of 20,000 or more
6	Counties adjacent to a metropolitan area and having an urban population of 2,500 to 19,999
7	Counties not adjacent to a metropolitan area and having an urban population of 2,500 to 19,999
8	Counties adjacent to a metropolitan area and having an urban population of fewer than 2,500
9	Counties not adjacent to a metropolitan area and having an urban population of fewer than 2,500

The data used for the numbers of primary care physicians, general dentists, and population in urban and rural counties were obtained from HHS' Area Resource File, originating from the American Medical

[25]Some professional associations have practice locations for their members, but results could not be projected to practice locations for nonmembers.

[26]These category codes are based on the size of the urbanized population, and rural areas are separated into those that are adjacent to metropolitan areas and those that are more remote.

Association, American Osteopathic Association, American Dental Association, and Census. We chose 1975-76 and 1981 as our base years for primary care physicians and general dentists, respectively, because these were the closest data available to the year Title VII supply programs began. The most current data available in the Area Resource File for comparison with the baseline data were data for 1990 for primary care physicians and 1989 for general dentists. (Analyses of changes in the urban-rural supply of primary care physicians and general dentists can be found in appendix II, figures II.3 and II.4.)

Changes in Distribution to Rural and Underserved Areas

We compared the percentage of primary care physicians practicing in various types of urban and rural areas with the percentage of population living there in 1975 and 1990 to determine if distribution to rural areas had improved since Title VII programs began. Dentist data were available for 1981 and 1987. We could not perform similar analyses for the other health professions because county-level data showing patient care practice locations were not available. (Analyses of changes in the urban-rural distribution of primary care physicians and general dentists can be found in appendix II, figures II.5 and II.6.)

We performed a similar comparison for health professional shortage areas, focusing on the number of primary care physicians and general dentists that HHS reported as needed in HPSAs from 1984 and 1985 through 1992. We chose 1984 and 1985 as our base years for primary care physicians and general dentists because HHS conducted major data validation exercises at that time. We did not include state, local, or other designated underserved areas outside of the HPSA system because they may overlap the federally designated underserved population, and criteria used for the state and local designations may not be comparable. (Analyses of changes in the number of primary care physicians and general dentists needed in HPSAs can be found in appendix II, figures II.7 and II.8.)

We also identified how many of the primary care physicians and general dentist full-time equivalents reported as needed in HPSAs were for full-time and part-time providers. We identified those locations with part-time positions as those needing from one-tenth to nine-tenths of a provider to determine the effect that these differences may have in recruiting full-time providers in urban and rural areas. (Analyses of comparisons of full-time and part-time primary care physicians and general dentists needed in urban and rural HPSAs can be found in appendix II, figures II.9 and II.10.)

We could not perform similar analyses for distribution of other health professions to HPSAs because HHS does not identify HPSAs specifically for them[27] or track the number practicing in primary care HPSAs. However, we were able to determine whether physician assistants and certified nurse-midwives provide care in underserved areas by comparing the zip codes of their practice locations to those for primary care HPSA locations.[28] We matched zip codes to HPSA county codes through use of a U.S. Department of Agriculture conversion program. While the data do not show the extent to which physician assistants and certified nurse-midwives are providing care to the underserved in counties with partial HPSAs, the data do show that they provide care to the underserved in counties entirely designated as a HPSA. (Analyses showing the number of physician assistants and certified nurse-midwives in urban and rural HPSAs can be found in appendix II, figures II.11 and II.12.)

Changes in Minority Recruitment and Retention in Health Education and Practice

The data we used for our analyses were obtained from HHS' Bureau of Health Professions. We requested data on education and practice by the following race and ethnic groups: African-American, Hispanic, Native American/Alaska Native, Asian-American/Pacific Islander, White, and other.

To determine if increases had occurred in health education, we compared the number of minority applicants, first-year enrollments, and graduates for 1980 and 1991. For African-Americans, Hispanics, and Native Americans in health professions education, current and historical data were available only for the medical, dental, and registered nursing occupations. (Analyses showing these results can be found in appendix III, table III.1)

As a further means of evaluating any changes in the number of minorities being educated in the health professions, we compared the percentage of applicants, first-year enrollments, and graduates for each minority group with the percentage that each minority represents within the general population. We also compared the percentage of minorities in health education with the percentage that each minority represents within the

[27]HHS also uses an HPSA system for mental health professionals.

[28]For our analysis, we included physician assistants whose primary specialties were family/general practice, internal medicine, pediatrics, and obstetrics gynecology and nurse-midwives whose primary responsibilities included clinical nurse-midwifery with and without births and maternal/child health. Data were provided by the American Academy of Physician Assistants and the American College of Nurse Midwives and estimated by them to include 78 percent and 80 percent of the total practicing population, respectively.

general U.S. population that was old enough and had attained a sufficient level of education to enter health profession schools. (Analyses showing changes in the number and representation of minorities in health professions education compared with population and education parity can be found in appendix III, tables III.2, III.3, and III.4.)

To the extent possible, we conducted similar analyses for the number of minorities in actual practice in the health professions. Data on the numbers of minority health practitioners were also limited. We obtained the number of minority health practitioners for each profession from the decennial census, currently the best available source for this purpose. However, these data are limited because the occupational data come as a byproduct of the collection of general population data. Occupational classification is determined from self-reported job title and job description resulting in a systematic bias in classifying respondents into occupations of higher status. Also, for many of the health occupations the size of the work force is relatively small and the sampling error can be a substantial limitation. We analyzed the available data for changes in total numbers of minorities and for the education parity tests described above. (Analyses showing changes in the number of minority practitioners and their representation in the health professions compared with education parity can be found in appendix III, tables III.5, and III.6.)

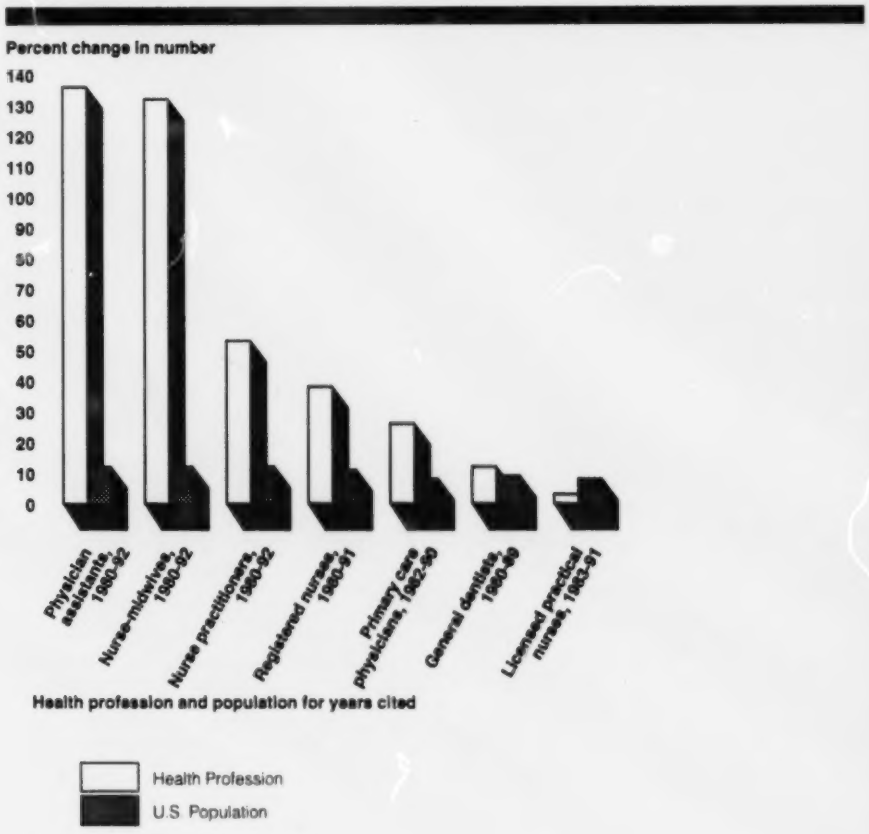
We carried out our work from March 1993 to April 1994 in accordance with generally accepted government auditing standards.

Changes in Urban-Rural Supply and Distribution of Health Professions

Supply of Most Health Professions Grew Much Faster Than U.S. Population

The supply of most categories of health professions in our review has grown much faster than the U.S. population in recent years. Figure II.1 shows that for the periods compared,[29] the number of people in some health professions grew by as much as 130 percent, while the population as a whole increased by about 10 percent. For the seven health professions we reviewed, only the number of licensed practical nurses grew more slowly than the general population.

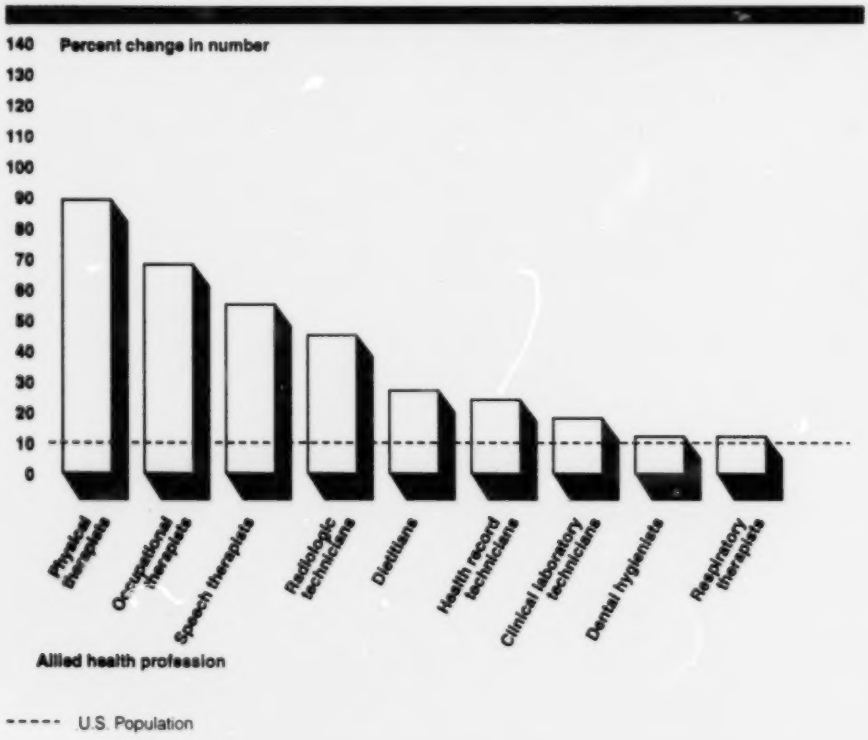
Figure II.1: Change in Supply of Selected Health Professions Compared With Change in U.S. Population



[29]Although we generally were able to examine the change for a period of 10 years or more for each of the seven professions, the starting and ending years for these comparisons varied from profession to profession because of differences in available data. For figure II.1, we made the periods as similar as possible within the general framework of 1980-92.

Likewise, the supply of the allied health professions we reviewed grew faster than the general population. As figure II.2 shows, increases in the number of people in the nine allied health professions for which data were available ranged from 12 percent to 89 percent, while the population as a whole increased 10 percent.[30] The large increases shown for physical therapists, occupational therapists, and speech therapists reflect greater demand for these professions due to reported overall shortages in supply, while smaller increases in the other professions reflect a reported closer match between available supply and existing demand.

Figure II.2: Change in Supply of Selected Allied Health Professions Compared With Change in U.S. Population, 1983-92



Although data were available on the overall number of persons in each of these professions, only two of the professions—primary care physicians and general dentists—had comprehensive data showing more specifically

[30]For all nine professions, the period measured is 1983-92.

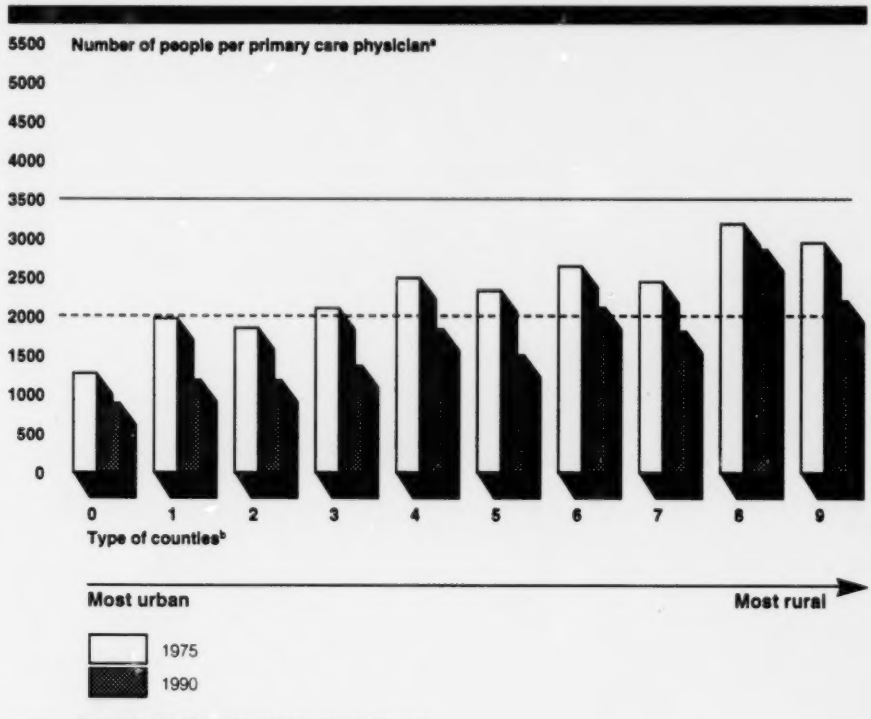
where these people provided health care. Most of our further analysis of distribution patterns thus had to be limited to these two professions.

Increased Supply of Primary Care Physicians Outpaced Population Growth in All Types of Urban and Rural Counties

The number of nonfederal primary care physicians providing patient care in the United States increased by about 75 percent between 1975 and 1990.[31] Data on where these physicians are practicing show that for all types of urban and rural counties, the increase in physician supply far exceeded the increase in general population. As figure II.3 shows, the number of people per primary care physician declined in all 10 categories of counties on the U.S. Department of Agriculture's urban-rural continuum (see app. I for fuller explanation of the categories). For example, in the most densely populated urban counties, the number of people per primary care physician dropped from 1,265 in 1975 to 879 in 1990, while in the most rural areas the number of people per primary care physician dropped from 2,536 to 1,872.

[31]Our period of comparison here is longer than shown in figure II.1. We used a 1975 starting point for this part of the analysis because it was closer to when Title VII programs for the supply and distribution of primary care physicians were established.

Figure II.3: Change in U.S. Population to Primary Care Physician Ratios in Urban and Rural Counties, 1975-90



[a]Includes allopathic physicians in family/general practice, internal medicine, and pediatrics providing patient care; and osteopathic physicians who are active in the same specialties and obstetrics/gynecology.

[b]For definitions of the categories 0-9 in the Department of Agriculture's urban-rural continuum see appendix I, table I.2.

HHS has generally designated that having more than 3,500 people per primary care physician qualifies a county or community as a health profession shortage area,[32] while having 2,000 people per primary care physician is considered ideal. Although some individual counties exceeded HHS' threshold standard of 3,500 people per primary care physician, on average all 10 categories of counties were well below this level, and 7 of the 10 had met or bettered HHS' target of 2,000 people per physician. This indicates that primary care physician shortages may be due more to

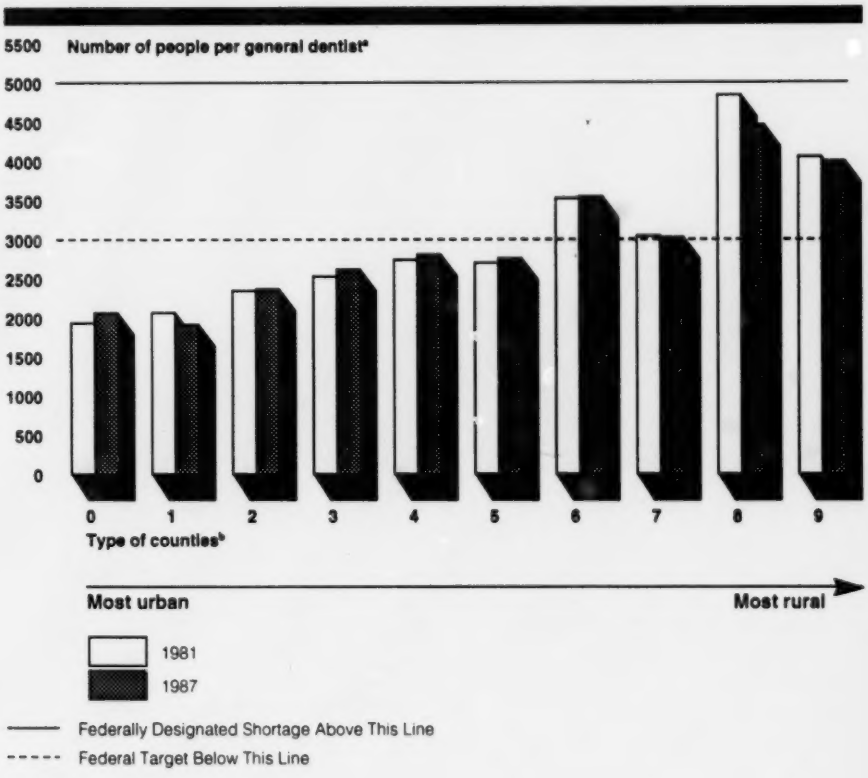
[32]This ratio may drop to 1 primary care physician to 3,000 people where high need is indicated.

individual community characteristics rather than an overall geographic maldistribution between urban and rural areas.

Supply of General Dentists Essentially Kept Pace With General Population Growth

The number of nonfederal general dentists providing patient care increased by about 7 percent between 1981 and 1987, the last year for which data were available showing county-level distribution. However, the supply did not grow faster than the general population in most types of urban and rural counties. As figure II.4 shows, dentist-to-population ratios remained fairly constant.

Figure II.4: Change in U.S. Population to General Dentist Ratios, 1981 and 1987



[a]Includes general dentists and pedodontists (children's dentists).

[b]For definitions of the categories 0-9 in the Department of Agriculture's urban-rural continuum see appendix I, table I.2.

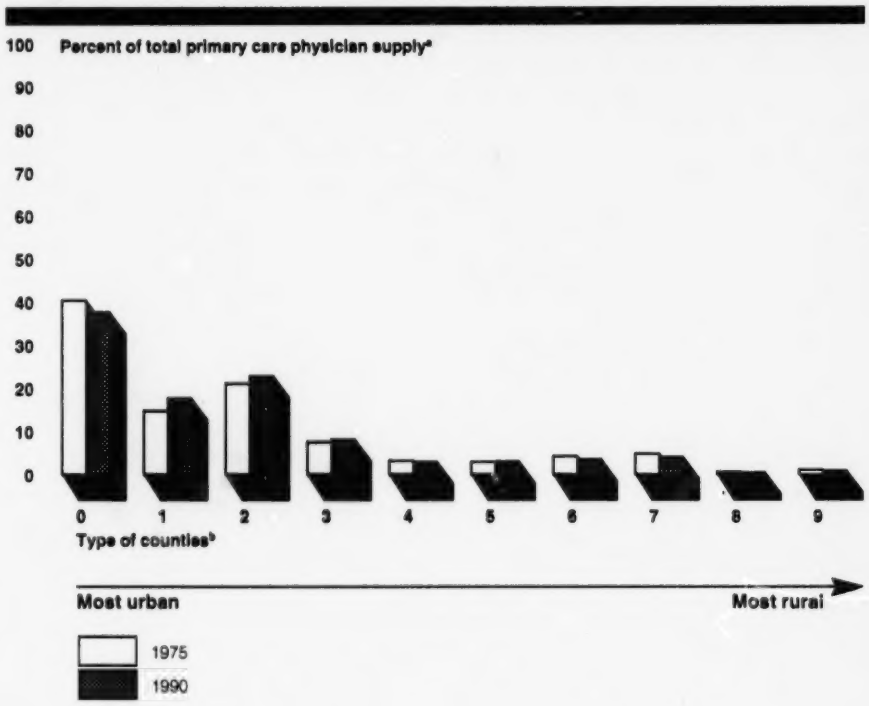
As with primary care physicians, HHS has established population-to-provider ratios as indicators of underservice due to health profession shortages. For dentists, these ratios are 5,000 people or more per dentist to qualify as an HPSA[33] and 3,000 people per dentist as a target for the ideal. On average, all 10 categories of counties were below the threshold standard for shortage designation, and 6 of 10 met or bettered HHS' target of 3,000 people per dentist.

No Significant Change in Distribution of Primary Care Physicians

Although the total number of primary care physicians increased substantially between 1975 and 1990, their distribution among the different types of urban and rural counties remained essentially the same. Figure II.5 shows the distribution for the 10 categories of counties in the Department of Agriculture's urban-rural continuum. For any of the categories, changes in the percentage of primary care physicians living there are either nonexistent or relatively small.

[33]This ratio may drop to 1 dentist per 4,000 people where high need is indicated.

Figure II.5: Change in Urban and Rural Distribution of Primary Care Physicians Between 1975 and 1990



[a]Includes nonfederal allopathic physicians in family/general practice, internal medicine, and pediatrics and osteopathic physicians who are active in the same specialties and obstetrics/gynecology.

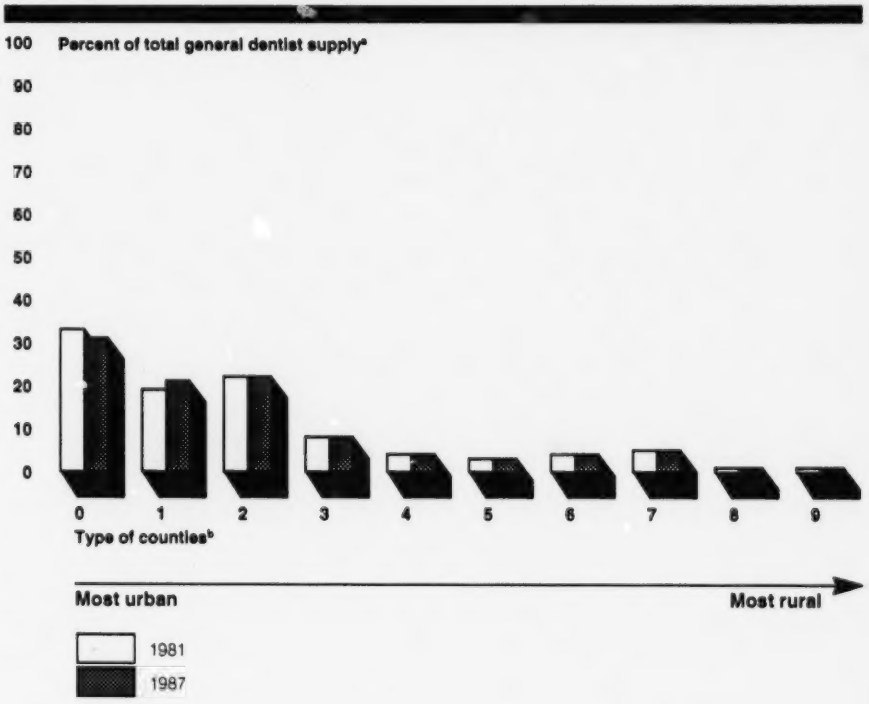
[b]For definitions of the categories 0-9 in the Department of Agriculture's urban-rural continuum see appendix I, table I.2.

The slight distribution changes that took place mainly reflect changes within individual categories of urban and rural counties, not between the urban and rural counties taken as a whole. For example, the percentage of physicians in the most heavily urbanized category dropped, but the drop was absorbed in the next several categories of urban counties. This was consistent with changes in the distribution of the general population for the period. Overall, rural counties had 16 percent of primary care physicians in 1975 and 14 percent in 1990.

No Significant Change in Distribution of General Dentists

As with primary care physicians, general dentists showed virtually no change in distribution among the various categories of urban and rural counties. As figure II.6 shows, the largest shift was a 2-percent change from core inner cities to less densely populated urban areas, a pattern similar to changes in the distribution of primary care physicians and the population as a whole. Overall, rural counties had 18 percent of the general dentists in 1981 compared with 17 percent in 1987.

Figure II.6: Change in Urban and Rural Distribution of General Dentists Between 1981 and 1987



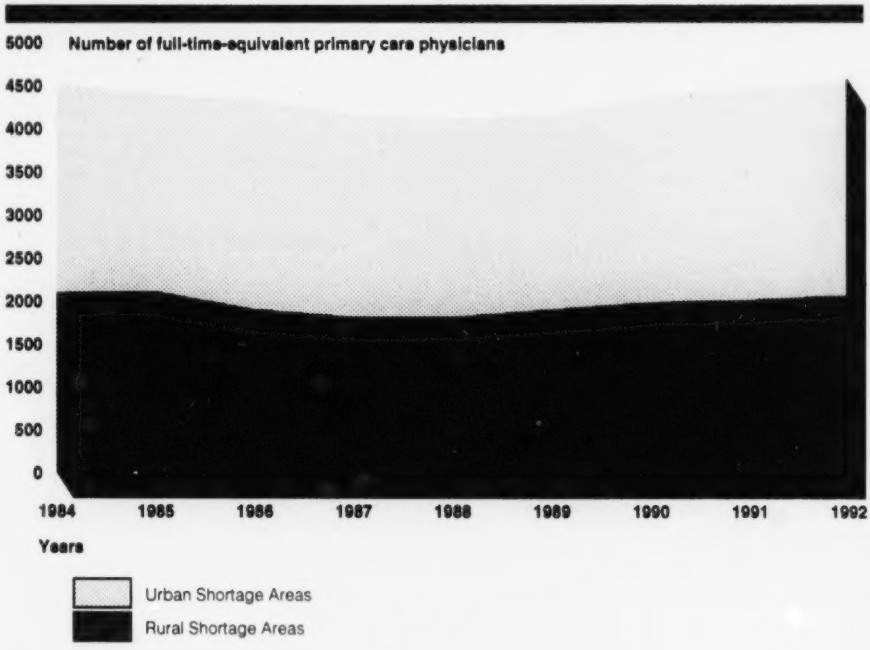
[a]Includes pedodontists (children's dentists).

[b]For definitions of the categories 0-9 in the Department of Agriculture's urban-rural continuum see appendix I, table I.2.

No Significant Change in Distribution of Primary Care Physicians and Dentists to HPSAs

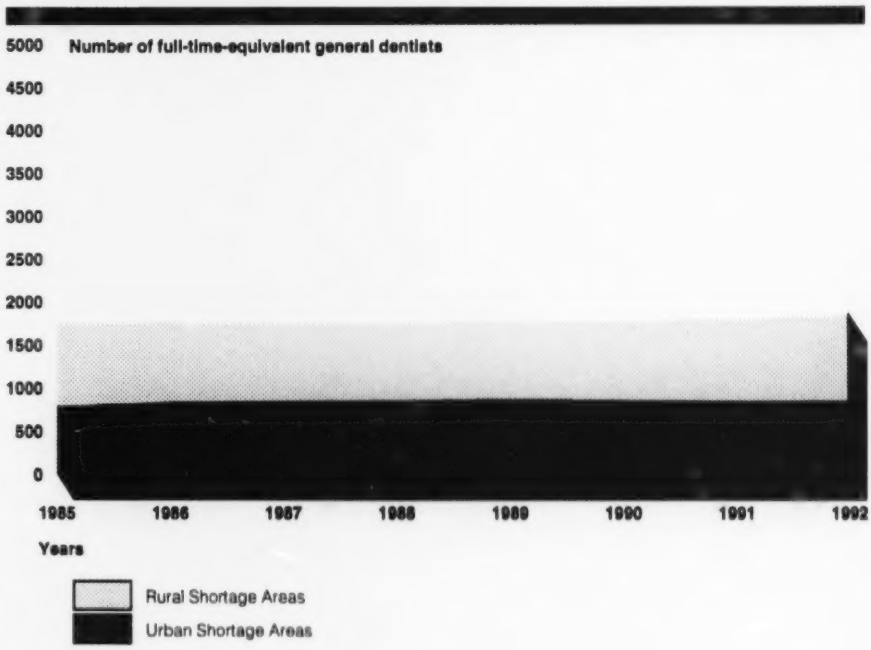
The number of full-time-equivalent primary care physicians needed in federally designated primary care shortage areas has remained fairly constant for both urban and rural areas from 1984 through 1992. As figure II.7 shows, HPSAs had a need for 4,496 full-time-equivalent primary care physicians in 1984 and 4,533 in 1992. The percentage needed in rural areas has remained about the same, ranging between 43 to 48 percent.

Figure II.7: Number of Primary Care Physicians Needed in Urban and Rural Shortage Areas, 1984-92



The number of general dentists needed in HPSAs also has remained fairly constant from 1985 through 1992. As figure II.8 shows, HPSAs had a need for 1,722 full-time-equivalent dentists in 1985 and 1,827 in 1992. The percentage needed in rural areas has remained about the same, ranging between 51 and 55 percent.

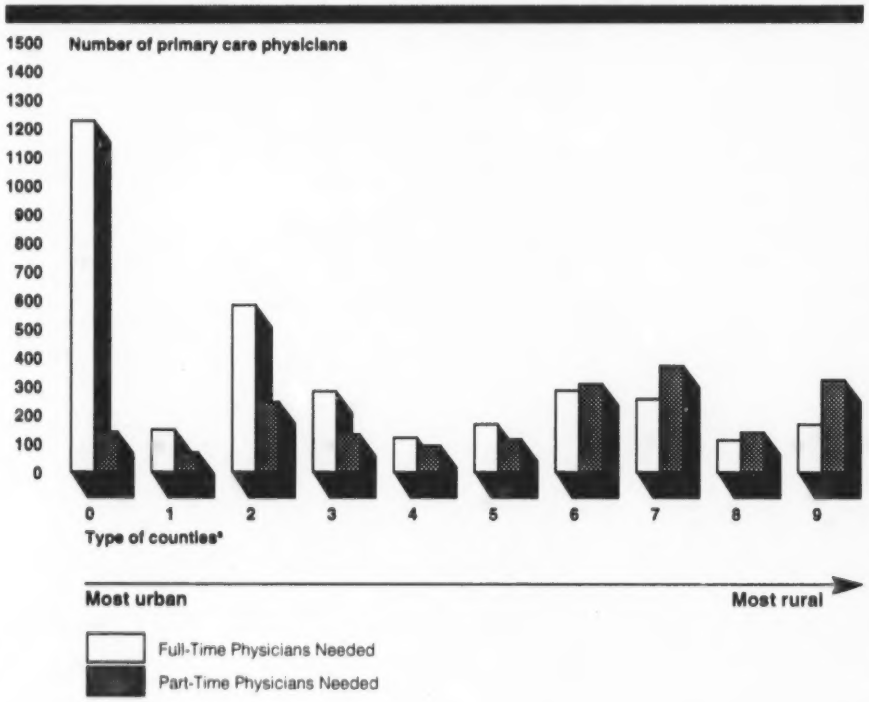
Figure II.8: Number of General Dentists Needed in Urban and Rural Shortage Areas, 1984-92



Rural HPSAs Report Greater Need for Part-Time Physicians and Dentists

Depending on where they are on the urban-rural continuum, HPSAs vary greatly in the extent to which their reported need for primary care physicians is for full-time or part-time positions. As figure II.9 shows, rural HPSAs report a greater need for part-time physicians, while urban HPSAs need more full-time positions. The results for rural HPSAs indicate a potential difficulty in resolving shortages, in that it may be difficult to match part-time needs with physicians' preference for full-time practice. The results for urban HPSAs indicate that improving geographic distribution between urban and rural areas may not significantly reduce underservice. For example, comparing figure II.9 with figure II.3 shows that counties with the greatest availability of primary care physicians per population also report the greatest amount of underservice due to primary care physician shortages.

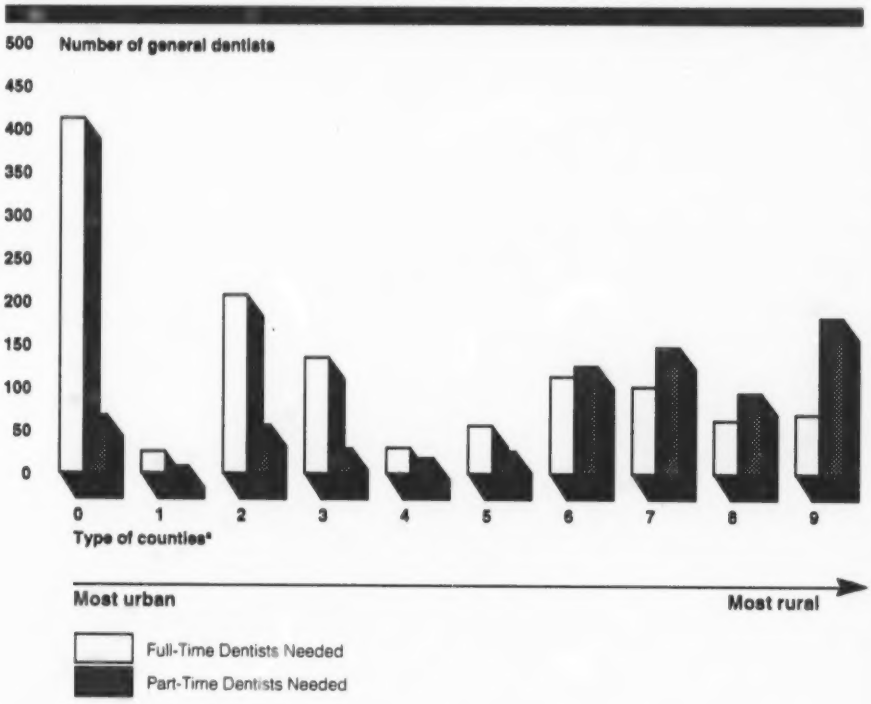
Figure II.9: Full-Time and Part-Time Primary Care Physicians Needed in Urban and Rural Shortage Areas as of December 31, 1992



[a]For definitions of the categories 0-9 in the Department of Agriculture's urban-rural continuum see appendix I, table I.2.

The pattern is essentially the same for HPSA requirements for general dentists. As figure II.10 shows, rural HPSAs have a greater need for part-time positions, while urban HPSAs primarily need full-time positions.

Figure II.10: Full-Time and Part-Time General Dentists Needed in Urban and Rural Shortage Areas as of August 1993

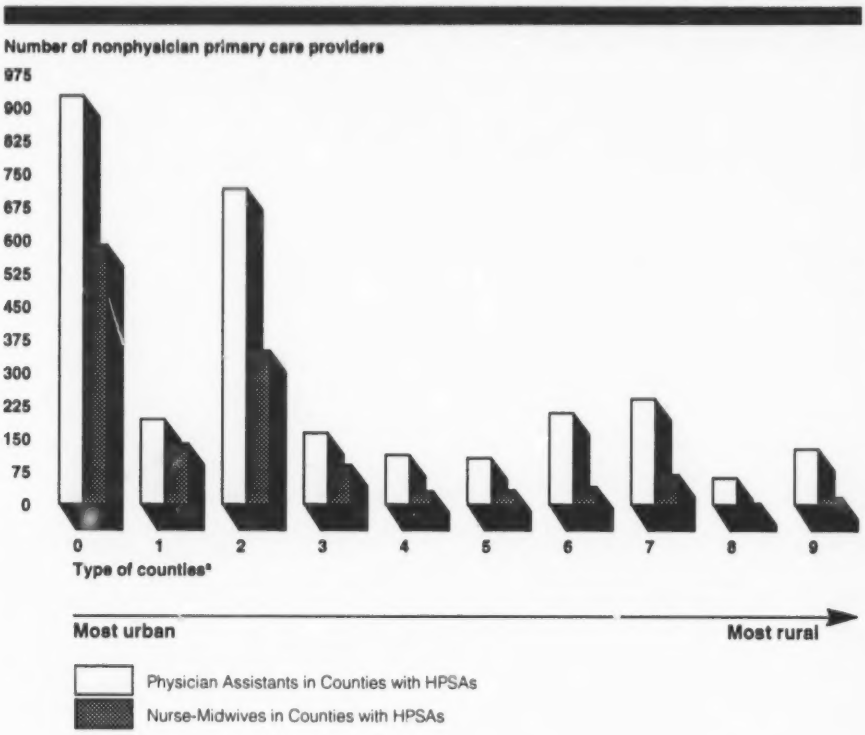


[a]For definitions of the categories 0-9 in the Department of Agriculture's urban-rural continuum see appendix I, table I.2.

Definition of Shortage Areas Does Not Include Professions That May Provide Significant Amounts of Care

HHS' current criteria for designating primary care HPSAs consider only the availability of primary care physicians. These criteria may understate the amount of care that is available from other types of health care professionals—in particular, nurse practitioners, physician assistants, and nurse-midwives—whom studies have shown to be capable of providing a significant amount of primary care services. Data obtained from two professional associations show that as of 1993 at least 4,203 physician assistants and nurse-midwives were practicing in counties designated, in whole or in part, as HPSAs. As figure II.11 shows, their numbers are greatest in urban areas, but—particularly for physician assistants—they are distributed across all categories on the urban-rural continuum.

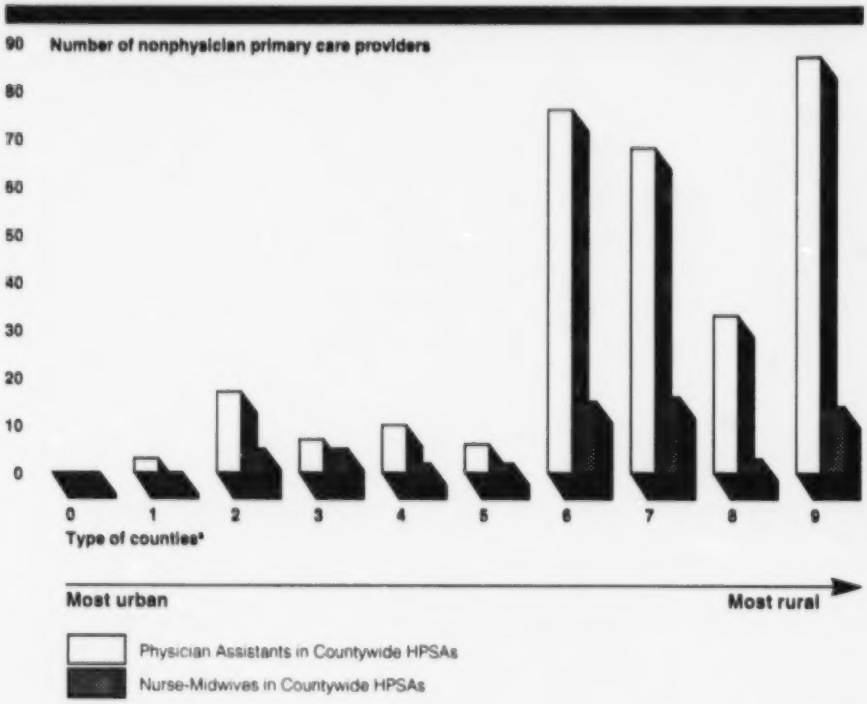
Figure II.11: Nonphysician Primary Care Providers Practicing in Counties With HPSAs as of 1993



[a]For definitions of the categories 0-9 in the Department of Agriculture's urban-rural continuum see appendix I, table I.2.

Existing data are not sufficient to determine the degree to which most of these persons are actually providing care to underserved populations within the HPSAs. It is very possible that a person may practice in a county that is partially designated as an HPSA, but provide care outside the underserved area. In contrast, those providing care in countywide HPSAs are known to provide care to the underserved. Available data show that 369 of the 4,203 physician assistants and nurse-midwives were providing care to the underserved in countywide HPSAs as shown in figure II.12.

Figure II.12: Nonphysician Primary Care Providers Practicing in Countywide HPSAs as of 1993



[a]For definitions of the categories 0-9 in the Department of Agriculture's urban-rural continuum see appendix I, table I.2.

Changes in Minority Representation in Health Education and Practice

Numbers of Underrepresented Minorities Have Increased

Over the past decade, minorities traditionally considered underrepresented in medical, dental, and nursing education have entered and graduated in increasing numbers, while totals for all races combined have dropped.[34] Table III.1 shows the change in applicants, first-year enrollments, and graduates between 1980 and 1991 for African-Americans, Hispanics, Native Americans, and all races combined.

Table III.1: Change in Numbers of Underrepresented Minorities in Health Professions Education, 1980 and 1991

	Applicants			First-year enrollments			Graduates		
Health profession	1980	1991	Percent change	1980	1991	Percent change	1980	1991	Percent change
Physicians[a]									
African-Americans	2,724	2,911	7	1,024	1,129	10	766	850	11
Hispanics	1,827	2,098	15	865	1,001	16	530	842	59
Native Americans	162	182	12	72	93	29	43	63	47
All races	40,013	37,464	-6	18,140	18,185	0	15,632	15,365	-2
Dentists									
African-Americans	550	307	-44	283	255	-10	214	174	-19
Hispanics	410	388	-5	160	274	71	90	296	229
Native Americans	33	19	-42	12	11	-8	14	12	-14
All races	9,601	5,632	-41	5,964	4,047	-32	5,495	3,918	-29
Registered nurses									
African-Americans	[b]	[b]	•	8,537	10,822	27	3,571	5,350	50
Hispanics	[b]	[b]	•	3,515	3,619	3	1,568	2,026	29
Native Americans	[b]	[b]	•	[b]	840	•	[b]	363	•
All races	[b]	[b]	•	102,540	113,526	11	68,520	72,230	5

[a]Data for applicants and first-year enrollments include allopathic and osteopathic students; while data for graduates are limited to allopathic students.

[b]Data not available.

[34]Comparable data showing the change over time for the other 14 health professions in our review were not available.

Degree of Parity Achieved Depends in Part on the Measure Applied

One way in which HHS evaluates the progress of minorities in the health professions is the degree to which they have attained population parity; that is, the degree to which the percentage of minorities in the profession compares with the percentage of minorities in the U.S. population as a whole. A comparison of the percentage of underrepresented minorities in medical, dental, and nursing education to their percentage of the U.S. population shows that population parity has not been achieved, except for first-year enrollments of Native American registered nurses. Table III.2 shows the level that African-Americans, Hispanics, and Native Americans have reached in relation to achieving population parity.

Table III.2: Underrepresented Minorities in Health Professions Education Compared With Underrepresented Minorities in the U.S. Population (Population Parity)

	Percentage of population parity attained[a]					
	Applicants		First-year enrollments		Graduates	
Health profession	1980	1991	1980	1991	1980	1991
Physicians						
African-Americans	59	66	49	52	42	47
Hispanics	70	60	72	59	52	59
Native Americans	68	67	67	70	47	56
Dentists						
African-Americans	50	46	41	53	34	37
Hispanics	65	74	41	73	25	82
Native Americans	58	47	34	37	42	42
Registered nurses						
African-Americans	[b]	[b]	72	80	45	62
Hispanics	[b]	[b]	52	34	35	30
Native Americans	[b]	[b]	[b]	101	[b]	68

[a]Population parity percentages reflect the extent to which the minority representation in the health profession category reflects the minority group's overall percentage of the U.S. population. In other words, a parity figure of 50 percent means that a minority group's representation is only one-half of what it is in the population as a whole.

[b]Data not available.

Achieving population parity in health education and training programs is difficult because the percentage of minorities that are old enough and have sufficient education to enter health professions school is not at population

parity. For example, in 1991, Hispanics represented 9.3 percent of the U.S. population, but represented only 4.9 and 3.4 percent of the population that was 25 years of age and older with a high school or college education, respectively. Table III.3 shows the composition of these minorities in the U.S. population taking age and education into account.

Table III.3: Composition of Underrepresented Minorities

	Percentage of total U.S. population		
Underrepresented minority	All members	25 years of age and older with 4 years of high school or more	25 years of age and older with 4 years of college or more
African-Americans			
1980	11.5	7.6	5.1
1991	11.9	8.8	5.6
Hispanics			
1980	6.4	3.4	2.4
1991	9.3	4.9	3.4
Native Americans			
1980	0.6	[a]	[a]
1991	0.7	[a]	[a]

[a]Data not available.

Adjusting population parity to account for age and education levels shows that, according to this measure, parity has been achieved in medical, dental, and nursing education in many cases. Table III.4 shows the level that African-Americans and Hispanics have reached in relation to achieving education parity.

Table III.4: Underrepresented Minorities in Health Professions Education Compared With College or High School Educated Underrepresented Minorities in the U.S. Population (Education Parity)

Health profession	Percentage of education parity attained[a]					
	Applicants		First-year enrollments		Graduates	
	1980	1991	1980	1991	1980	1991
Physicians[b]						
African-Americans	134	140	111	112	96	99
Hispanics	192	166	200	163	142	162
Native Americans	[d]	[d]	[d]	[d]	[d]	[d]
Dentists[b]						
African-Americans	113	98	93	113	76	80
Hispanics	179	204	113	200	69	223
Native Americans	[d]	[d]	[d]	[d]	[d]	[d]
Registered nurses[c]						
African-Americans	[d]	[d]	110	108	69	84
Hispanics	[d]	[d]	102	65	68	57
Native Americans	[d]	[d]	[d]	[d]	[d]	[d]

[a]Education parity percentages reflect the extent to which the minority representation in the health profession category reflects the minority group's overall percentage of the U.S. population that is 25 years of age and older with a college or high school education.

[b]Comparison group is all members of the minority group 25 years of age and older with a college education.

[c]Comparison group is all members of the minority group 25 years of age and older with a high school education.

[d]Data not available.

Numbers of Underrepresented Minorities in Health Professions Practice Have Increased

Generally, the numbers of African-Americans, Hispanics, and Native Americans have increased at a greater rate in health professions than in the U.S. population as a whole. Table III.5 shows the change in numbers between 1980 and 1990 for these underrepresented minorities. Data on health professionals were available for 13 professions in our review.[35]

[35]Data were not available for nurse practitioners, nurse-midwives, physicians assistants, and emergency medical technicians.

Table III.5: Change in Numbers of Underrepresented Minorities in Health Professions Practice, 1980 and 1990

	African-Americans			Hispanics			Native Americans		
	1980	1990	Percent change	1980	1990	Percent change	1980	1990	Percent change
Population	**25,930,000**	**29,087,000**	**12**	**14,809,000**	**22,477,000**	**52**	**1,324,000**	**1,797,000**	**36**
Health profession									
Physicians	13,243	20,874	58	18,853	28,781	53	513	868	69
Dentists	3,134	4,767	52	2,193	4,009	83	185	190	3
Registered nurses	54,585	80,568[a]	48	17,938	24,470[a]	53	3,045	8,162[a]	168
Licensed practical nurses	77,852	79,136	2	15,062	19,780	31	2,790	3,450	24
Occupational therapists	774	1,999	158	330	1,187	260	50	58	16
Respiratory therapists	5,106	7,027	38	2,586	3,236	25	208	293	41
Medical record technicians	1,478	8,655	486	602	4,086	579	176	727	313
Dental hygienists	699	1,478	111	754	1,995	165	37	148	300
Physical therapists	2,930	5,105	74	1,276	3,292	158	111	297	168
Dietitians	14,400	17,193	19	2,483	4,313	74	332	548	65
Radiologic technicians	7,897	10,051	27	3,977	7,131	79	377	596	58
Speech therapists	2,039	2,797	37	711	1,508	112	76	128	68
Clinical lab technicians	28,076	42,449	51	10,092	18,086	79	862	1,479	72

[a]1990 data not available; 1992 data used.

Education Parity Achieved in Several Health Professions

Table III.6 shows that African-Americans and Hispanics have achieved education parity in several health professions.[36] However, African-Americans and Hispanics in some of the health professions requiring a high school education to enter training (dental hygienists and occupational therapists) remain well below education parity. In three

[36]Data on Native Americans 25 years of age and older with college or high school education were not available.

professions (registered nurses, speech therapists, and physical therapists), education parity worsened between 1980 and 1990.

Table III.6: Underrepresented Minorities in Health Professions Practice Compared With College or High School Educated Underrepresented Minorities in the U.S. Population (Education Parity)

	Percentage of education parity attained[a]	
Health profession	**1980**	**1990**
Physicians[b]		
African-Americans	60	65
Hispanics	183	158
Dentists[b]		
African-Americans	49	56
Hispanics	74	83
Registered nurses[c]		
African-Americans	57	49[d]
Hispanics	42	30[d]
Licensed practical nurses[c]		
African-Americans	237	210
Hispanics	103	98
Occupational therapists[c]		
African-Americans	58	60
Hispanics	55	67
Respiratory therapists[c]		
African-Americans	139	122
Hispanics	158	105
Medical record technicians[c]		
African-Americans	129	177
Hispanics	118	156
Dental hygienists[c]		
African-Americans	20	23
Hispanics	49	59
Physical therapists[c]		
African-Americans	90	63
Hispanics	88	76
Dietitians[c]		
African-Americans	284	217
Hispanics	110	102

(continued)

Health profession	Percentage of education parity attained[a] 1980	1990
Radiologic technicians[c]		
African-Americans	109	88
Hispanics	123	117
Speech therapists[c]		
African-Americans	65	49
Hispanics	51	50
Clinical lab therapists[c]		
African-Americans	152	147
Hispanics	123	117

[a]Education parity percentages reflect the extent to which the minority representation in the health profession category reflects the minority group's overall percentage of the U.S. population that is 25 years of age and older with a college or high school education.

[b]Comparison group is all members of the minority group 25 years of age and older with a college education.

[c]Comparison group is all members of the minority group 25 years of age and older with a high school education.

[d]1990 data not available, 1992 data used.

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